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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,527	02/05/2002	Thomas B. Bolt	Q02-1037-US1/ 11198.82	2908

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EXAMINER

VERBRUGGE, KEVIN

ART UNIT	PAPER NUMBER
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2188

DATE MAILED: 02/13/2004

6

Please find below and/or attached an Office communication concerning this application or proceeding.

7

Office Action Summary

Application No.

10/072,527

Applicant(s)

BOLT ET AL.

Examiner

Kevin Verbrugge

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, 6, 13, and 30-33 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication No. 2003/0200473 to Fung who discloses a system and method for activity or event based dynamic energy conserving server reconfiguration.

Regarding claims 1 and 30, Fung shows the claimed storage system in Figs. 1 and 2 where the claimed housing and disk drives are clearly visible. The housing is anticipated by chassis 55, for example, and the disk drives are shown as HDD (hard disk drive) units.

Fung shows the claimed controller as RAID controller 108, for example, in Fig. 25, discussed at paragraph 276. He clearly teaches that his system allows at least two disk drives to be in different modes during the transfer of data as claimed. At paragraph 280, he discloses that (emphasis added)

[0280] In the RAID 1 (and RAID 10) configurations, only one drive (primary or mirror) or one set of drives (primary set or mirror set) need to be available

or powered ON at a time to support such read operations. The identical nature of the data stored on the primary and mirror drives only changes in response to a write operation and is unchanged by the more frequent read operations. One of the drives can be either in a standby mode (such as a mode where power is provided by the spindle motor is not operating) or with operating power (e.g. operating voltage and/or current) completely removed. Various shades of power conservation may be applied between completely on and completely off, particularly if the internal circuitry of the disc drive and control electronics and any on-board buffer memory or the like are designed with staged power conservation features. It is noted that since the primary and secondary disc drives store identical data and are completely interchangeable from a functional (and likely from a physical standpoint) there is little need to identify that it is the primary or the secondary drive that is powered off or placed into a standby mode, reduced power consumption mode, power conservation mode, or simply powered off. More accurately, we may refer to the drives as the active drive (or active drive set) and the inactive drive (or inactive drive set).

Regarding claims 2 and 31, Fung's device performs as claimed when operating as a RAID 1 device (mirroring) where data is directed to a first set of disks and a second set of disks simultaneously (see paragraph 280 and Fig. 25).

Regarding claims 5, 6, 32, and 33, when Fung's device has one set of drives of a RAID 1 configuration in the inactive set, then half of the drives are in a standby mode as claimed.

Regarding claim 13, Fung shows the claimed combination at Fig. 1, with host system as management node 65.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 7-12, 14-29, and 34-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over by U.S. Patent Application Publication No. 2003/0200473 to Fung.

Regarding claim 3, Fung does not disclose that his device has at least one subset with at least five disk drives as claimed. However, the number of disk drives included in a subset of disk drives is an obvious matter of design choice, with the number of disks used being affected by things like cost, size, availability, capacity, speed, etc.

Regarding claim 4, Fung does not mention using parity protection in his device and in fact mentions a reason for not using parity protection at paragraph 273 where he teaches that higher performance results when parity is not used due to the overhead required in calculating parity. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include parity protection in Fung's device to provide additional data integrity (with the tradeoff being less performance and greater cost) since Fung mentions parity and since parity protection was commonly provided in other RAID levels.

Regarding claims 7-12, 14-29, and 34-38, while Fung does not explicitly teach that at least two thirds of his drives are inactive at any one time, the actual number of inactive drives at any one time is an obvious matter of design choice, where the designer needs to balance the performance losses of a greater number of drives being inactive (taking a finite time to become activated once called on) with the power and heat costs of a greater number of drives being active at any one time (since drives use more power and generate more heat when active). Furthermore, the claimed arrangements are all an obvious matter of design choice. The number of rails, rows, and drives are all a matter of design choice together with the number of drives that are in any mode at any given time.

Conclusion

Any inquiry concerning a communication from the Examiner should be directed to the Examiner by phone at (703) 308-6663.

Any response to this action should be labeled appropriately (serial number, Art Unit 2188, and After-Final, Official, or Draft) and mailed to Commissioner for Patents, Washington, D.C. 20231, faxed to (703) 872-9306, or delivered to Crystal Park 2, 2121 Crystal Drive, Arlington, VA, 4th Floor Receptionist.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Application/Control Number: 10/072,527

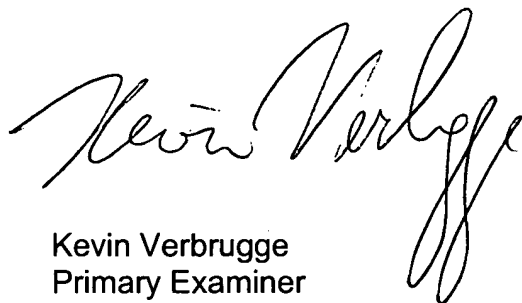
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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see

<http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197.

A handwritten signature in black ink, appearing to read "Kevin Verbrugge". The signature is fluid and cursive, with the first name "Kevin" written in a larger, more prominent script than the last name "Verbrugge".

Kevin Verbrugge
Primary Examiner
2/11/04